Remarks

Claims 15-37 are currently pending in the Application.

35 U.S.C. §103(a) rejection

Claims 15-16, 18-21, 23-26, 28-34 and 36-37 stand rejected under 35 U.S.C. §103(a) as being obvious in view of Yano (U.S. Patent No. 5,914,731) and further in view of Becerra (U.S. Patent No. 5,675,365). Claims 17, 22, 27 and 35 stand rejected under 35 U.S.C. §103(a) as being obvious in view of Yano, Becerra and further in view of Iwasaki (U.S. Patent No. 6,142,598).

Applicants submit that the Examiner has **not** established a *prima facie* case of obviousness for the claims rejected under 35 U.S.C. §103(a). Applicants note:

> "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. **Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations**. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure" (emphases added) *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants submit that the Examiner has failed to show that Yano and Becerra teach each and every element as claimed in the present application.

Claim 15
Applicants submit that the Examiner has <u>not</u> shown that Yano and Becerra disclose, suggest or teach, *inter alia*, at least the following features recited by Claim 15 of the present application:

"driving timing sequences being obtained by shifting said <u>reference timing sequence</u> with corresponding one of N <u>random values</u> ...wherein each set of driving timing sequences sequentially drives the M printing elements to provide random distances in the predetermined direction between centers of consecutive dot images..." (emphasis added)

The Examiner concedes that Yano does not disclose wherein the random distance is a distance between centers of consecutive dot images. See page 3, second full paragraph of the Office Action. The Examiner asserts that Becerra discloses forming dot images wherein the distance between centers of consecutive dot images is varied randomly with respect to the direction traveling by the printhead. See page 3, third full paragraph of the Official Action.

The Examiner further alleges that it would have been obvious to modify apparatus disclosed by Yano to randomly change the distance between centers of consecutive dot images as disclosed by Becerra. Applicants respectfully traverse the Examiner's assertion.

Becerra discloses an ejector activation scheduling system using the technique called "random-access ejector activation." According to Becerra, "a random access ink-jet system wherein, including a printhead arrangement wherein addresses of individual ejectors to be activated are submitted to a subset of ejectors on the printhead one at a time, at a predetermined fixed frequency." See column 4, lines 50-54 in Becerra. Becerra further defines a plurality of time slots in a printing cycle (referring to col. 5, lines 55-58), and provides a scheduler to avoid the "time-slot conflict" (referring to abstract in Becerra). According to Becerra, "the scheduler will detect this set of conflicting time slots and then attempt to re-allot the ejector activations to different time slots, so that there will be no more than one ejector activation per time slot." See column 9, lines 24-27 of Becerra.

Further, according to Becerra, only one ejector is activated at a unique time slot. See column 9, lines 26-27 of Becerra. Thus, Becerra provides the "random-access ejector activation" to schedule the activation order of ejector heads to avoid time-slot conflict. Compared to the present invention, Becerra uses a different technique, i.e. scheduling the time slot for ejectors, and devotes to a different issue, i.e. avoiding time-slot conflict. Therefore, Becerra fails to show, teach, or suggest "a reference timing sequence" and "a random value series" to provide "random distances in the predetermined direction" as recited in Claim 15.

According to Claim 1, the "printing element set" includes "M printing elements" and the "timing device" generates "N sets of driving timing sequence" in response to the "reference timing sequence" and the "random value series." Contrarily, Becerra provides the ejector activation scheduling system to avoid the time-slot conflict by scheduling the ejector heads to no more than one ejector activation per time slot. Yano discloses the randomized variations in a printing apparatus to control the size of the dots, which is irrelevant to time-slot scheduling. Therefore, combining Yano with Beccerra cannot provide the "random distances in the predetermined direction" utilizing the "reference timing sequence" and the "random value series" as recited in Claim 15.

Applicants submit that the Examiner has not shown that Yano and Becerra disclose, suggest or teach "driving timing sequences being obtained by shifting said reference timing sequence with corresponding one of N random values ...wherein each set of driving timing sequences sequentially drives the M printing elements to provide random distances in the predetermined direction between centers of consecutive dot images" as recited in Claim 15. Hence, Claim 15 is patentable over Yano and Becerra and should be allowed by the Examiner. Claims 16 and 18-19, at least based on their dependency on Claim 15, are also believed to be patentable over Yano and Becerra.

Claim 20

Applicants submit that, at least for the reasons stated above, neither Yano nor Becerra teach, disclose or suggest "generating N sets of driving timing sequences by shifting said <u>reference timing sequence</u> with a <u>random value series</u> including N random values, wherein N is a positive integer; and driving said printing element set in response to said N sets of driving timing sequences to form said dot images, wherein distances between centers of consecutive dot images formed by the printing element set of the printing head are random in the predetermined direction" (emphasis added) as recited in Claim 20. Hence, Claim 20 is patentable over Yano and Becerra and should be allowed by the Examiner. Claims 21 and 23, at least based on their dependency on Claim 20, are also believed to be patentable over Yano and Becerra.

Claim 24

Applicants submit that, at least for the reasons stated above, neither Yano nor Becerra teach, disclose or suggest "a timing device for generating a driving timing sequence by shifting a <u>reference timing sequence</u> with a <u>random value</u>; and a driving device for, in response to said driving timing sequence, driving said printing element to form an image by printing dots on said printing medium; wherein, with the shifting of said reference timing sequence, a cyclic unevenness of said image is scattered and random distances in the predetermined direction between centers of consecutive dots printed by the at least one printing element of the printing head is provided" (emphasis added) as recited in Claim 24. Hence, Claim 24 is patentable over Yano and Becerra and should be allowed by the Examiner. Claims 25-26 and 28-31, at least based on their dependency on Claim 24, are also believed to be patentable over Yano and Becerra.

Claim 32

Applicants submit that, at least for the reasons stated above, neither Yano nor Becerra teach, disclose or suggest "generating a driving timing sequence by shifting said <u>reference timing sequence</u> with a <u>random value</u>; and driving said printing element with said driving timing sequence to form said image on said printing medium, wherein distances between centers of consecutive dot images formed by the at least one printing

element of the printing head are random in the predetermined direction" (emphasis added) as recited in Claim 32. Hence, Claim 32 is patentable over Yano and Becerra and should be allowed by the Examiner. Claims 33-34 and 36-37, at least based on their dependency on Claim 32, are also believed to be patentable over Yano and Becerra.

Claims 17, 22, 27 and 35

Applicants submit that Claims 17, 22, 27 and 35, at least based on their dependency on Claims 15, 20, 24 and 32, respectively, are believed to be patentable over Yano, Becerra and Iwasaki, because there is no prima facie 35 USC 103(a) case based on Yano and Becerra, as shown above, and because the Examiner has not shown to the Applicants where Iwasaki discloses, teaches or suggests the features not found in Yano and Becerra.

The Examiner is encouraged to contact the undersigned to discuss any other issues requiring resolution.

Conclusion

In view of the above, reconsideration and allowance of all the claims are respectfully solicited.

The Commissioner is authorized to charge any additional fees which may be required or credit overpayment to deposit account no. 12-0415. In particular, if this response is not timely filed, then the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136 (a) requesting an extension of time of the number of months necessary to make this response timely filed and the petition fee due in connection therewith may be charged to deposit account no. 12-0415.

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November 29, 2005
(Date of Deposit)

Shannon Tinsley
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Signature
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